

**National Marine Fisheries Service  
National Cooperative Research Program**

**FY2004 Funded Projects**

## Table of Contents

<b>PROJECT OBJECTIVE</b>	<b>4</b>
<b>FUNDING HISTORY</b>	<b>4</b>
<b>OFFICE OF SCIENCE AND TECHNOLOGY</b>	<b>4</b>
<b>NORTHEAST FISHERIES SCIENCE CENTER (NEFSC) / NORTHEAST REGIONAL OFFICE (NERO)</b>	<b>5</b>
Project Title: Study Fleet Expansion - Transition from Pilot to Operational Program	5
Project Title: Equipment and Operating Costs to Support Cooperative Research Projects	6
Yellowtail Flounder Tagging	6
Herring Stock Identification	7
Haddock Maturity Study	7
Cooperative Surfclam Survey	7
<b>SOUTHEAST FISHERIES SCIENCE CENTER (SEFSC)</b>	<b>8</b>
Project Title: Support for the Southeast Cooperative Research Program (CRP)	8
<b>SOUTHWEST FISHERIES SCIENCE CENTER (SWFSC)</b>	<b>8</b>
Project Title: Southern California Adult Sardine Survey	8
Project Title: Small Cetacean Studies Around the Main Hawaiian Islands	8
Project Title: Nearshore Groundfish Survey	9
Project Title: Migration Patterns & Life History Patterns for N. Pacific Albacore	9
<b>NORTHWEST FISHERIES SCIENCE CENTER (NWFSC)</b>	<b>9</b>
Project Title: Training and Outreach on Cooperative Research	9
Project Title: Solicitation and Funding of Industry Sponsored Proposals to Conduct Research on Bycatch of West Coast Groundfish	10
<b>ALASKA FISHERIES SCIENCE CENTER (AFSC)</b>	<b>11</b>
Project Title: Internet Accessible Longline Survey Database	11
Project Title: Audit of Rockfish Species Identification at Processing Plants	11
Project Title: Sablefish Logbook Program	12

<b>Project Title: Improving Fishing Gear Selectivity Through Access to Technology for Observing Gear Performance and Fish Behavior</b>	<b>12</b>
<b>Project Title: Fishing Technology and Conservation Engineering to Reduce Trawl Bycatch</b>	<b>12</b>
<b>Project Title: Augmentation of Annual AFSC Crab Survey in the Eastern Bering Sea</b>	<b>13</b>
<b>Project Title: Support for NMFS Participation in Cooperative Investigations of Walleye Pollock and Pacific Cod in the Western Gulf of Alaska</b>	<b>14</b>
<b>Project Title: Measures to Eliminate Seabird Injuries and Mortalities from Interactions with Trawl Nets and Cables</b>	<b>14</b>
<b>Project Title: Cooperative Studies of Essential Fish Habitat and Mobile Fishing Gear Effects in the Aleutian Islands</b>	<b>15</b>
<b>PACIFIC ISLANDS FISHERIES SCIENCE CENTER (PIFSC)</b>	<b>15</b>
<b>Project Title: Collaborative Lobster Tagging in the Northwestern Hawaiian Islands</b>	<b>15</b>

Project Objective: This program is structured on regionally-identified cooperative research priorities and relate to internal (*Managing the Nation's Bycatch* 1998; *NOAA Fisheries Data Acquisition Plan* 1998; *Marine Fisheries Stock Assessment Improvement Plan* 2001; *Strategic Plan for Fisheries Research* 2004) and external (Kammer Report 2000; National Research Council Reports—*Improve Fish Stock Assessments, Effects of Trawling & Dredging on Sea Floor Habitat*, and *Cooperative Research in the National Marine Fisheries Service*) reviews. The National Marine Fisheries Service (NMFS) proposes a continuation of strategic investments in fishery stock assessment augmentation and the general collection of data through regional cooperative research activities. Specific projects may include chartering of commercial fishing vessels to augment the number of charter vessel days-at-sea, development of gear modifications and fishing practices to reduce bycatch, studies to evaluate the effects of fishing gear on sea floor habitats, and identification of essential fish habitat (EFH). All allocations are routed through the appropriate Science Center.

#### AOP Elements

*Objective 2:* Recover Protected Species

*Objective 3:* Rebuild and Maintain Sustainable Fisheries

External Recipients: A broad range of external recipients are identified in this spending plan, including fishery constituencies in every NMFS region across the country as well as state, private, and university participants.

#### Funding History

FY 2001 = \$2,993,000.00

FY 2002 = \$2,750,000.00

FY 2003 = \$1,043,000.00

FY 2004 = \$2,721,000.00

Funds are provided to each of the regional cooperative research programs to conduct specific cooperative research activities and to supplement Congressional appropriations for regional programs. Overall coordination of the NCRP is conducted by the NMFS Office of Science and Technology through the NMFS Cooperative Research Working Group.

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### **Office of Science and Technology**

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The NMFS Office of Science and Technology is responsible for overall coordination of the NCRP in coordination with the NMFS Cooperative Research Working Group. Members of the Working Group are the National Cooperative Research Coordinator, and one representative from each of the NMFS Science Centers and Regional Offices. NCRP funds in FY2004 will be used by the Office of Science and Technology to hire a full-time program coordinator and to conduct a workshop of NMFS coordinators from the regional programs to address issues of common concern and develop methods to improve coordination and implementation of regional programs.

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## Northeast Fisheries Science Center (NEFSC) / Northeast Regional Office (NERO)

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### **Project Title: Study Fleet Expansion - Transition from Pilot to Operational Program**

The NEFSC and the NERO have established a cooperative research program in consultation with the regional Councils, State and academic agencies, and fishing community partners that explicitly identifies a multi-year commitment to a mix of core long-term fishery dependent and fishery independent time series projects as well as shorter-term projects designed to address priority management questions or issues. One of the core long-term fishery dependent initiatives is the creation of study fleets.

Stock assessments routinely use data that describe the performance of fishing vessels as indices of relative abundance (*e.g.*, catch per unit of fishing effort). Data on fishing effort (*e.g.*, fishing method/tow speed and haul duration; mesh size; area fished), catch and landings characteristics (*e.g.*, species/size/sex age composition), disposition of the catch (*e.g.*, discards vs. landings), and environmental factors affecting catches (*e.g.*, water temperature; depth, habitat type) are critically important in stock assessments. These data are usually collected by: (1) observers at sea; (2) self-reporting by the fishing industry in logbooks; or (3) via dockside interviews. All of these methods have limitations (*e.g.*, observers are expensive; dockside interviews are limited in scope).

A study fleet is a group of cooperating fishing vessels/operations that provide more accurate, more detailed (temporal and spatial), and more comprehensive data than would be obtained without deploying expensive observers. The study fleet concept focuses on supporting electronic reporting mechanisms for haul based data as compared to trip or sub-trip level records typical of logbooks in the northeast. The study fleet participants helped design the program and are trained as necessary. Three fishery organizations are subcontracted to help implement the program and to acquire/record data and procure biological samples. Special equipment (such as computerized data loggers and instrumentation for environmental measurements) has been tested and 15 vessels are currently participating in the evaluation and field testing of electronic data acquisition systems.

During FY04, NERO and NEFSC plan to expand the number of vessels from 15 to 30, to continue development of appropriate electronic equipment for vessel operations, and to finalize data models and processes necessary to ensure timely availability of these records to the stock assessment workshop (SAW) process. Existing funds from NERO have supported the involved fishery organizations as well as a contract for system development, equipment acquisition and deployment. The NEFSC has partially implemented the hiring plan contained in previous spending plans with an emphasis on junior staff necessary to support field work and two positions within Data Management Systems to support data processing and initial review. Experienced stock assessment staff are required to work with the industry/extramural partners in designing the study fleet expansion, in continuously interacting with industry participants during

implementation, and in collaboratively managing, analyzing, and distributing the acquired data. Existing senior stock assessment staff have supported these activities during the pilot stage, but cannot adequately support full implementation and ongoing analysis planned for FY04 and beyond.

**Project Title: Equipment and Operating Costs to Support Cooperative Research Projects**

Cooperative research projects between 2000 and early 2003 have provided the NEFSC greater experience with vessel charter costs, field costs and the associated base labor, deployment and post deployment support, data processing, and final information dissemination. The FY04 NEFSC Cooperative Research spending plan will fill positions that partially address these infrastructure support needs, but experience has indicated that the early estimates of infrastructure support for field operations were under-valued. Additional funds are required to support four specific cooperative research projects that are of ongoing importance to the NEFSC, NERO, the Councils and fishery constituencies.

The projects for which funds are requested include: 1) yellowtail flounder tag-recapture study; 2) herring stock identification; 3) investigation of haddock maturity in closed area I; and 4) equipment, travel, and overtime to support industry-based surveys including the surfclam and mid-Atlantic transect surveys. The requested funds will cover commercial and recreational vessel contracts, contracts for data entry and sample processing technicians, a graduate student stipend, conventional tags, lotek data-storage tags, tag rewards, and expendable field equipment. Other capital equipment (electronic scales) is specifically needed to support these projects. Once purchased, the equipment will be available for gear evaluations and other specialized studies. Similar NEFSC Ecosystems Survey Branch, Data Management Systems, and Populations Dynamics Branch equipment purchases (electronic measuring boards, hardened field computers, standardized nets, expendable field equipment, etc) have been coordinated to support pressing demands for NEFSC field staff and equipment. Equipment has been borrowed from the Southeast and Northwest Fisheries Science Centers.

Yellowtail Flounder Tagging: The yellowtail tagging project is designed to complement and improve the existing stock assessments of U.S. yellowtail resources. As identified in recent Stock Assessment Workshops and Transboundary Resources Assessment Committees, research is needed to provide independent estimates of mortality, movement and growth. The tagging study will complete approximately 40 days of tagging from Maine to Georges Bank aboard commercial vessels in 2004. Tag releases will be proportional to local abundance to facilitate representative estimates of movement and mortality. Yellowtail will be tagged with Peterson disc tags and data-storage tags. Fishermen who report recaptured yellowtail will be rewarded with a chance to win a series of \$1000 lotteries as well as some "instant" \$100 rewards. Recapture information will be presented at an annual meeting of all cooperators and ultimately used to estimate mortality and movement among stock areas as well as provide growth observations.

Herring Stock Identification: The herring study will examine the rates of mixing in herring fisheries in the Gulf of Maine-Georges Bank region by application of modern morphometric techniques and image processing. This information will improve our understanding of the spatial structure of the herring population leading to better assessment and management of this resource. Full body measurements of herring and similarly, measurements on otoliths, will be used to classify spawning fish from coastal Maine and Massachusetts, Georges Bank, and Nova Scotia. The goal will be to obtain relatively large sample sizes of herring from each of these spawning locations. These data will be entered into a database and will serve as the basis of classification functions using discriminant function analysis and CART, or classification trees. In addition, large samples will be collected from each of the important seasonal fisheries in the region with an expectation of using the results from the spawning components analysis to accurately determine the percentages of the various components in seasonal fisheries for herring in the region. This process will be repeated over several years to determine the seasonal variation in mixing rates in the fisheries.

Haddock Maturity Study: Cooperative research will be conducted to estimate total haddock fecundity at age and length and to evaluate female developmental stage. Initial sampling would occur on the experimental haddock longline fishery within Closed Area I during February to March in 2004. Five or more fishing trips on vessels from the Cape Cod Commercial Hook Fisherman's Association will be used to sample 500 female haddock in Closed Area I during January to early-March in 2004. Individual ovaries will be weighed and stored in formalin and later transferred to Gilson's fluid. Individual fish length, weight, and otoliths will be collected from each sampled fish. Digital video imaging and high-resolution image processing will be used to count eggs and estimate their size distributions. Age-, length- and weight-specific fecundities will be estimated using regression analysis and compared to assess precision. Egg size distributions will be compared among females, spawning times, and environmental factors. This cooperative research study will provide new data for estimating the reproductive potential of the Georges Bank haddock stock.

Cooperative Surfclam Survey: NMFS clam surveys are only conducted every 3 years, with the next survey scheduled for 2005. These surveys are an important component of the stock assessments and subsequent management advice. The clam industry suggested a Cooperative survey in 2004 because they have concerns about the surfclam resource and they did not want to wait until 2005. The Industry will pay for the boat and crew as well as for 4 sea-going scientists from Rutgers University. NEFSC has made a commitment to the Industry to help carry out the survey and to enter, audit and analyze the data.

The cruise will consist of a Shakedown leg (April 5-9) and Survey Legs I and II (June 3-20). The June survey will gather quantitative data from approximately 230 stations, with a stratified random sampling design, to estimate surfclam biomass from the Hudson Canyon to the Delmarva Peninsula. The purpose of the Shakedown leg is to check out computer and sensor systems. In addition, three dredge calibration experiments, approximately 70 tows, are planned during the Shakedown and Survey Legs. NEFSC

will have 2 scientists on board at all times, and a third NEFSC person on shore to provide logistical support.

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### **Southeast Fisheries Science Center (SEFSC)**

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#### **Project Title: Support for the Southeast Cooperative Research Program (CRP)**

The CRP's principal goal is to conduct high priority research projects which have been identified in concert with the regional councils and industry, and which will address critical research needs. Projects are funded on a standard competitive basis. Congress initiated the southeast cooperative research funding to assist NMFS in improving the confidence that both commercial and recreational fishermen have in the data and analyses performed in support of fisheries management. This program is consistent with GAO recommendations to heighten working relations with stakeholders.

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### **Southwest Fisheries Science Center (SWFSC)**

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#### **Project Title: Southern California Adult Sardine Survey**

The goal of this project is to update and improve the estimates of egg production and spawning stock biomass of Pacific sardine through the collection of adult sardine samples for reproductive output. This survey information is used in the Daily Egg Production Method (DEPM) which is used in annual stock assessment processes in estimating the abundance of sardine for the Pacific Fishery Management Council (PFMC). For the past 10 years, estimates of adult parameters were based on samples obtained in 1994. The current population is quite different from that of 1994. Efforts to update the analysis in 2002 produced a statistically inadequate sample. Adult samples taken by trawl in 2004 are needed to update the adult reproductive parameters, which enables us to understand the possible biological change of the adult population and to obtain unbiased estimates of spawning biomass of Pacific sardine. The SWFSC will contract commercial trawling vessels to collect adult sardines in the areas of the sardine egg production survey in April as determined by the sardine egg surveys done on the New Horizon and David Starr Jordan.

#### **Project Title: Small Cetacean Studies Around the Main Hawaiian Islands**

The SWFSC needs to finish the cetacean survey in the vicinity of the Main Hawaiian Islands as part of the MMPA-required 5 year periodic survey to assess the stocks. Emphasis will be on the strategic stock of false killer whales. Funds will be used to contract for a survey and related biological sampling. Approximately 50% of the costs will be used for a commercial whale-watching vessel, with the remainder used for contracted survey execution. The SWFSC will provide the survey design. The contract will be for 1 survey as designed by the SWFSC plus designated biological sampling to be conducted in the summer-fall of 2004.



### **Project Title: Nearshore Groundfish Survey**

Management of nearshore groundfish is the most serious problem now facing the PFMC, as fishing effort has progressively been restricted to shallow nearshore waters. These species generally fall in the unassessed “data-poor” category, and those that have been assessed (lingcod, cabezon) are among the most controversial cases. The Scientific and Statistical Committee (SSC) and Stock Assessment Review (STAR) peer-review panels have consistently called for establishment of a nearshore species survey. The proposed effort would utilize longline and trap gear. Fish traps have the added benefit of being non-lethal, and eventually could be utilized beneficially in marine protected areas, with appropriate safeguards and permissions. Initial scope of the survey would be Central California (Pt. Conception to Cape Mendocino), with potential out-year expansion based on results of survey evaluation. This project would be coordinated with related work being done by the NWFSC. The SWFSC will use funds to contract for vessel charters of 15 days to conduct longline sampling and to conduct fish trap sampling.

### **Project Title: Migration Patterns & Life History Patterns for N. Pacific Albacore**

The American Fisheries Research Foundation (AFRF) has been working with scientists from the SWFSC since 2001 on a five-year research study to determine movement patterns and general life history strategies of North Pacific albacore. Albacore are targeted by various fisheries of the North Pacific Ocean in any given year, including fleets from the United States, Japan, Taiwan, and Canada. The project is supported in part through funding provided by the AFRF, which serves as a research-based organization spearheaded by the troll fishery and canning industries of the United States. The objectives of the long-term study are to deploy 500 archival tags in albacore over the period 2002-05. To date, 116 archival tags have been deployed and 1 has been recovered, which represents only the second recovered archival tag for this species ever (i.e., Japan scientists recently recaptured a fish that was at liberty for nearly a year). In 2004, 120 tags will be deployed during 2 tagging trips. Deployments are made on vessels chartered through the parent organization of the AFRF, namely the Western Fishboat Owners’ Association (WFOA). Archival tag data are integral to providing accurate information of North Pacific Albacore migratory behavior and distribution and ultimately, critical to developing sound stock assessments regarding the status of this valuable marine resource. It is important to note that the future of this long-term project rests largely on obtaining operating funds on a year-to-year basis and coupled with an anticipated tag return rate of approximately 5%, it is essential that tagging efforts continue in 2004 (and into 2005) to increase the likelihood of obtaining adequate recoveries to develop scientific-based management recommendations.

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## **Northwest Fisheries Science Center (NWFSC)**

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### **Project Title: Training and Outreach on Cooperative Research**

The NWFSC cooperative research program has reached out to the industry in several ways. The Center has supported the development of the FishResearchWest.org Web Site

(<http://www.fishresearchwest.org/>) that provides information on west coast cooperative research and the continuation of notifications on current opportunities and issues to the west coast groundfish industry. Through discussions with industry and following recent recommendations stemming from the National Research Council's report on cooperative research, the NWFSC has identified the need for additional outreach activities to improve industry participation in cooperative research. The NWFSC approach is to sponsor two outreach activities:

1) A workshop for industry on cooperative research: "*Cooperative research: what is it, how do you become involved, how do you write a cooperative research proposal?*"

This workshop would outline the various avenues available to the industry for getting involved in cooperative research on the west coast and would provide training in the process of writing cooperative research proposals.

2) Training to improve safety on cooperative vessels

This would provide funding for the associated crew of industry vessels to obtain training in such things as CPR, Advanced First Aid and FDA food service regulations. This would allow more vessels to provide safe environments for cooperative research.

### **Project Title: Solicitation and Funding of Industry Sponsored Proposals to Conduct Research on Bycatch of West Coast Groundfish**

In FY02, a process was begun in collaboration with the Pacific States Marine Fisheries Commission to solicit and fund proposals from the fishing community to conduct research on west coast groundfish. The NWFSC proposes to continue this activity in FY04 by allocating additional funds for industry-sponsored proposals that specifically address two bycatch issues:

1) Development of bycatch reduction gear

Oregon Department of Fish and Wildlife in cooperation with the west coast groundfish observer program has tested new net designs to reduce bycatch of overfished species. The gear designs developed so far have been very promising but catch of species such as lingcod are still high. A workshop held in 2003 with the industry provided a list of the types of gear modifications that the industry would like to develop and test. This process would solicit proposals from industry to develop gear that reduces bycatch of overfished species.

2) Development of discard survival indices for west coast groundfish

Species such as lingcod and sablefish (unlike *Sebastes*) potentially have significant post-discard survival but the effect of deck handling procedures on survival has not been fully quantified. It is therefore difficult to accurately

estimate the discard mortality for these species. A halibut survivability index, which can be used by on board observers, has been developed to estimate post-discard survival. The RFP process would solicit proposals in cooperation with the industry to develop such survivability indices for sablefish and lingcod.

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## **Alaska Fisheries Science Center (AFSC)**

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### **Project Title: Internet Accessible Longline Survey Database**

AFSC scientists in cooperation with Alaska's longline industry have been conducting an annual longline survey to assess the distribution and abundance of the dominant groundfish species inhabiting the upper slope of the continental shelf in the Gulf of Alaska, Aleutian Islands and the eastern Bering Sea. The time series for this survey dates back to 1978. Unfortunately, the availability and access of the data by other researchers and the longline fishermen is limited. Leaders in Alaska's longline fishery who are active in the North Pacific Fishery Management Council process have requested that AFSC scientists working at the Auke Bay Laboratory develop a relational database of the historical longline survey data which they could access via the internet. In 2003, an outside vendor completed development of a relational database populated with the existing survey data. Currently the vendor is developing an interactive web site which can be made accessible to researchers and longline fishers. The original request envisioned a multiple-year project. Summarized survey results have been developed for only sablefish over the entire time series. For the second project year, we propose to summarize survey results for all species and survey years. The work would be accomplished through a contract to an outside vendor. The AFSC would use requested funds to establish a contract for the period of one year to expand the current database to include all surveyed species and make the data accessible to the longline fishers operating in Alaska on the interactive web site.

### **Project Title: Audit of Rockfish Species Identification at Processing Plants**

Rougheye and shortraker rockfish are commercially valuable species in the Gulf of Alaska. These two species are currently managed as a complex with a combined allowable biological catch (ABC). However, the North Pacific Fishery Management Council is considering managing the two species separately, rather than as a complex. Therefore, identification of both species in the landings to ports in the eastern Gulf of Alaska will be critical to both successful quota management and to stock assessment (as most landings are made by small vessels without observers). The primary source of catch information needed to estimate total catch of these two species is Alaska Department of Fish and Game landing receipts (fish tickets). The species composition of each landing is recorded on the fish tickets at the seafood processing plant based on species identification by processing plant workers (graders). Yet, a number of shortraker and rougheye rockfish are difficult to differentiate without careful examination by trained personnel.

The purpose of this project is to ensure accurate species identification by graders at seafood processing plants. Accurate information is required for catch estimation

subsequently used in stock assessments and fishery management. We propose 3 steps: 1) produce a one-page laminated species identification key with photographic and written descriptions for graders to use; 2) on-site training of graders by experienced fishery scientists; and 3) audit of rockfish species identification at processing plants. The cooperating partners in this project are the Alaska Fisheries Science Center, Auke Bay Laboratory and the Alaska Longline Fishermen's Association.

**Project Title: Sablefish Logbook Program**

AFSC scientists in cooperation with Alaska's longline industry have been conducting a sablefish logbook program to index sablefish abundance based on commercial fishery data. The time series for this logbook program dates back to 1997. Unfortunately, NMFS does not have a dockside program to collect logbooks and verify information from fishermen. In contrast, the International Pacific Halibut Commission (IPHC) has an active dockside program for the halibut fishery. The AFSC proposes to use IPHC port samplers to collect sablefish logbooks from fishermen. Using their experienced samplers will increase data quality and increase the visibility of the sablefish logbook program. Using an existing dockside program also will be cheaper than an independent dockside program administered by NMFS. The AFSC proposes to support IPHC collection of sablefish logbooks, data editing based on interviews, and entering the edited data into a database. The IPHC has requested they enter the edited data to protect confidentiality of fishery records they handle. The AFSC will establish a contract with the IPHC to collect, edit, and key sablefish logbooks.

**Project Title: Improving Fishing Gear Selectivity Through Access to Technology for Observing Gear Performance and Fish Behavior**

To speed the development and application of methods to reduce bycatch, gear mounted camera systems will be made available to fishermen. Lacking direct observation tools they are forced to infer critical fish behavior and gear configuration based on catches and other indirect data. This can slow or misdirect attempts to improve gear selectivity. The Conservation Engineering project of the AFSC has developed the necessary experience and equipment and applied them in cooperative research to improve fishing gear. The proposed project would open access to this equipment and communication with researchers to all commercial fishermen working to reduce bycatch. Industry partner United Catcher Boats will arrange for an agent to maintain one or more camera systems in Dutch Harbor, provide it to participating vessels and train vessel crew in its operation. The agent will know fishing gear construction methods and be trained by NMFS in the maintenance and deployment of the camera systems. NMFS will also provide materials for distribution describing bycatch reduction methods.

**Project Title: Fishing Technology and Conservation Engineering to Reduce Trawl Bycatch**

The Resource Assessment and Conservation Engineering (RACE) Division of the AFSC has the experience, equipment, and a number of willing industry partners to pursue

cooperative research to improve fishing gear and methods for bycatch reduction and address the effects of fishing gear on seafloor habitats. Funding is needed for fishing vessel costs, and small amounts of travel and supplies to pursue these opportunities. In consultation with partners, several of the following projects will be carried out. Some are continuation of last year's cooperative studies and others are new initiatives. The main project will be trawl modifications to reduce salmon bycatch, improving a prototype system developed last year in cooperation with the United Catcher Boats and J. Gauvin and Assoc. along with support from several other fishing companies and organizations. The list of other potential projects include: fishing for cod and rockfish with semi-pelagic trawls; detecting areas of vulnerable habitats to avoid when trawling; measuring the width and consequences of 'pelagic' trawl bottom contact; determining injury rates for crabs contacting trawl sweeps and bridles; and determining distances of cross-seafloor movements by longlines and pots. Potential project partners from the fishing industry include: The Groundfish Forum, Alaska Dragger's Association, Lummi Fisheries Systems, Trident Seafoods, and United Catcher Boats.

**Project Title: Augmentation of Annual AFSC Crab Survey in the Eastern Bering Sea**

The management of the Alaskan crab fisheries in the Eastern Bering Sea is undertaken jointly by the Alaska Board of Fisheries and the North Pacific Fishery Management Council. Implementation of the management is the responsibility of Alaska Department of Fish and Game (ADFG) in consultation with NMFS. Scientists from AFSC are responsible for conducting the annual eastern Bering Sea bottom trawl survey that is used to estimate the abundance of juvenile, mature female, and legal male crab stocks. From these data, ADFG determines the annual harvest guideline. Representatives from the Alaska crab industry approached AFSC leadership requesting to participate in a cooperative research survey effort with NOAA Fisheries to improve the data base for managing Bering Sea crab resources. As a result of initial discussions, the industry representatives established the non-profit Bering Sea Fisheries Research Foundation (BSFRF) through which they and the AFSC will establish a formal MOU to engage in cooperative joint research projects of mutual interest where costs will be shared equitably. In consultation with AFSC scientists, BSFRF Board of Directors have identified their number one research priority to be the reduction in the uncertainty of the estimates of mature female and legal male opilio snow crab abundance. Because the opilio crab stock is considered to be below  $B_{msy}$ , the rate of exploitation is set at a conservative level to encourage further rebuilding. Given the relative uncertainty in the abundance estimates particularly for mature female crab, there is a significant proportion of the probability distribution for the estimate of abundance that will fall below the minimum threshold. The primary method for increasing precision and reducing uncertainty is to increase the number of sampling stations in the existing trawl survey. NMFS scientists have agreed with BSFRF that the best way to reduce uncertainty in the 2004 abundance estimates is to increase the sampling effort in the opilio grounds by about 50% by adding a third vessel to the last half survey. The BSFRF proposes to fund the third vessel with funds they raise from the industry as their contribution to the 2004

BSFRF/AFSC cooperative research program and AFSC will staff and supply the vessel to meet NOAA's share.

Funding will be dedicated to providing AFSC's equitable share of the costs of the project as specified in the MOU to augment the survey sampling. The BSFRF will charter a trawl vessel for 20 to 40 days depending on final survey plans at about \$5K per day, for their share of the project costs. The AFSC will purchase materials to build standard fishing gear, sampling supplies and equipment for the BSFRF charter of fishing vessel, and travel for scientists to staff the vessel. Additionally, the AFSC will purchase the fuel for the chartered vessel.

**Project Title: Support for NMFS Participation in Cooperative Investigations of Walleye Pollock and Pacific Cod in the Western Gulf of Alaska**

Pacific cod and walleye pollock are important species to the economy of the communities of the eastern Aleutian Islands. The Eastern Aleutian Borough is seeking external funding for several projects to address uncertainties in the assessment of pollock and cod. These projects are designed to involve local vessels and community members in research projects of direct relevance to their community. Local residents have questioned the assessment of these stocks because their fishing experiences are not consistent with results indicating stock declines.

The research proposed by Eastern Aleutian Borough includes 1) enhanced collection of biological information from cod and pollock catches, 2) exploratory acoustic surveys of spawning pollock aggregations of western Gulf of Alaska, and 3) a pilot tagging program for cod and pollock to improve knowledge of migration and stock structure. The research proposed by Eastern Aleutian Borough would benefit from close collaboration with NMFS scientists. The objective of this companion proposal is to provide support for travel and overtime for NMFS scientists participating in the project. It is anticipated that NMFS scientists will be involved in training technicians and fishers in biological and acoustic data collection, calibration of echosounders, and inter-ship comparison of acoustic data. The work will also involve days at sea on commercial fishing vessels to participate in tagging operations and the collection of acoustic and biological data. These trips will be of relatively short length (<5 days). This work is in collaboration with trawl fishers represented by Beth Stewart, Natural Resources Department, Eastern Aleutian Borough, Alaska.

**Project Title: Measures to Eliminate Seabird Injuries and Mortalities from Interactions with Trawl Netsond Cables**

Seabirds are known to interact with the trawl netsond cables (third wire net monitoring systems). Both injuries and mortalities have been documented. The Alaska Region Office has determined that trawl vessels deploying third wire netsond systems adversely affect the endangered short-tailed albatross. AFSC personnel have been cooperating with Alaska's trawling fleets through the At-sea Processors Association, The Groundfish Forum, and United Catcher Boats to find simple solutions to this problem. The use of

third wire netsonds has been discussed among many participants of the Second International Fishers Forum convened in Honolulu, Hawaii in 2002. Without a viable solution various NGO's will push for an outright ban on trawl third wires, as was done in southern oceans. Cooperative Research funds will be used to develop several possible mitigation measures and conduct experimental tests to determine effectiveness of these measures during a commercial fishery.

The seabird specialist at the AFSC will coordinate this project. Research will be conducted aboard a commercial trawler during normal fishing operations. The project will support the costs of the vessel's observer who will assist data collection during the field experiment. The majority of the funds will be used to develop digital video technology to monitor the field trials, analyze the video records, and report the results.

**Project Title: Cooperative Studies of Essential Fish Habitat and Mobile Fishing Gear Effects in the Aleutian Islands**

The Aleutian Island fishing grounds are highly diverse and relatively productive habitat for the numerous rockfish species particularly Pacific Ocean perch (POP). The benthic invertebrate fauna in the Aleutians is extensive and also diverse. Sponges are one of the dominant life forms and often associated with occurrence of juvenile rockfish. The effect of fishing commercial fishing gear over these grounds on this diverse habitat is unknown but could be expected to reduce the productivity of fish species such as juvenile POP. The North Pacific Fishery Management Council is currently considering a number of area restrictions in the Aleutians. Based on consultations with one of the trawl fishing sectors, a cooperative research project was proposed to investigate the ecological significance of observed associations between juvenile POP and complex sponge habitat in the Aleutian Islands. Sponge habitats will be mapped using advanced acoustic and video technology. Biochemical analysis of POP tissue samples will quantify the functional importance of sponge habitat.

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**Pacific Islands Fisheries Science Center (PIFSC)**

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**Project Title: Collaborative Lobster Tagging in the Northwestern Hawaiian Islands**

The aim of this proposal is to augment shortfalls in programmatic funding for chartered commercial fishing vessels participating in an ongoing spiny lobster and slipper lobster tagging program in the Northwestern Hawaiian Islands (NWHI). The scientific objectives of the tagging program are to (1) collect essential life history and distributional data for spiny lobster and slipper lobster, (2) continue the lobster tagging experiment to advance population dynamics model development, (3) document habitat degradation and associated bycatch (vertebrates and invertebrates) stemming from lobster fishing in the NWHI, and (4) provide marine vertebrate and invertebrate samples for fatty acid analyses to elucidate trophic linkages and dependencies in monk seals. The use of chartered commercial fishing vessels is pivotal to the success of this program as the annual research survey aboard the NOAA research vessel *Oscar Sette* lacks sufficient fishing effort to provide adequate tag recoveries for parameter estimation (as well as samples for tagging).

Lobster biological data and population dynamics models from the 1980s form the basis of present assessments of lobster stocks in the NWHI. Lobster populations in the NWHI have undergone significant changes in abundance and distribution since then, and recent hypotheses suggest that fluctuations in monk seal populations in the NWHI may be linked to population fluctuations of lobsters in the NWHI. During a technical review of the NWHI lobster assessment models it was recommended that collaborative research programs between industry and the PIFSC be developed to provide independent estimates of population size and updated estimates of population dynamics.

In accordance with these recommendations the PIFSC lobster research team, with wide support from industry and the Western Pacific Regional Fishery Management Council, implemented a collaborative lobster tagging program. A series of lobster tagging and recapture cruises, using both research and chartered commercial fishing vessels, have already occurred at Necker Island and Maro Reef, and additional cruises (research and charter) are required to complete the studies, and to recapture animals tagged on previous cruises. The initial cruises provided some data on habitat degradation and bycatch levels stemming from commercial lobster fishing operations in the NWHI, and preliminary samples for fatty acid analyses. Additional data and samples are required to assess fishery impacts on the environment and on trophic interactions.